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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,969	08/25/2006	Paul R. Drury	27754/26717	5387
4743 7590 12/02/2010 MARSHALL, GERSTEIN & BORUN LLP 233 SOUTH WACKER DRIVE 6300 WILLIS TOWER CHICAGO, IL 60606-6357				
EXAMINER				
ANGWIN, DAVID PATRICK				
ART UNIT		PAPER NUMBER		
3729				
NOTIFICATION DATE		DELIVERY MODE		
12/02/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mgbdocket@marshallip.com

### Office Action Summary

**Application No.**

10/564,969

**Applicant(s)**

DRURY, PAUL R.

**Examiner**

DAVID P. ANGIN

**Art Unit**

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 May 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 11, 18, 19 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11, 18, 19, and 22-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-06)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/3/10 has been entered.

### Claim Rejections - 35 USC § 102

The following is a set of quotations of the appropriate paragraphs of 35 U.S.C. §102 that form the basis for the rejections under this section made in this Office Action:

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claim 11** is rejected under 35 U.S.C. § 102(b) as being anticipated by *Gardner* (US Patent 4,246,076).

- a. *Gardner* discloses in his reference:
- i. defining a plurality of distinct bodies (Fig. 1a, item 21; 1:35-36, *the examiner notes that Figs. 1a-e show one nozzle being formed, but the text reveals and one skilled in the art would know that multiple nozzles are formed by the same method*) of polymeric material distributed over the nozzle plate plane (Fig. 1d; *the examiner notes that the 'nozzle plate plane' is located on the upper surface of item 23*); and

subsequently forming at least one metal nozzle plate layer (Fig. 1d, item 23) by electroforming (2:49-50) around said peripheries of said bodies of polymeric material so as to define at least in part the shapes of said apertures.

**Claim Rejections – 35 USC § 103**

The following is a quotation of 35 U.S.C. § 103(a) that forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically taught or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. § 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 18 and 24** are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Gardner* (US Patent 4,246,076) in view of *Nakazawa et al* (JP Patent Publication H06-206314).

- a. *Gardner* discloses in his reference the following:
  - i. forming a layer of first photoresist material (Fig. 1a, items 13 and 21) on a substrate (item 1);

subsequently selectively exposing and removing first photoresist material to define on the substrate an array of distinct bodies of said first material (Fig. 1c; 3:20; 1:35-36, *the examiner notes that Figs. 1a-e show one nozzle being formed, but the text reveals and one skilled in the art would know that an array of nozzles are formed on the substrate by the same method*);

subsequent to said step of selectively exposing and removing first photoresist material, forming a first plate of metal (Fig. 1d, item 23) around said bodies, so as to form a metal nozzle plate having apertures, each aperture containing one of said bodies (Fig. 1d, item 11) of said first photoresist material;

- ii. forming a body of a first material (Fig. 1a, items 13 and 21) said body having a periphery; and

subsequently forming a plate (Fig. 1d, item 23) of second material around said body such that the plate extends around at least a portion of said periphery of said body of said first material.

- b. Regarding claims 18 and 24, in addition to the above limitations, *Gardner* may not expressly disclose forming a nozzle extending through the body.
  - i. However, *Nakazawa et al* teaches forming a nozzle extending through a body (Figs. 1 and 7-10). The advantage of forming a nozzle extending through a body is to produce a nozzle with less vibration during operation. Therefore, it would have been obvious to form a nozzle extending through a body to produce a nozzle with less vibration during operation.

**Claim 19** is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Gardner* (US Patent 4,246,076) in view of *Nakazawa et al* (JP Patent Publication H06-206314) and further in view of *Chung et al* (US Patent 7,240,433).

- a. Regarding claim 19, in addition to the limitations in claim 18, *Gardner* as modified may not expressly disclose discloses in his reference depositing a metallic seed layer on the substrate prior to forming the layer of first photoresist material.
- i. However, *Chung et al* teaches in his reference depositing a metallic seed layer (Fig. 1H, item 46) on the substrate prior to forming the layer of a photoresist material (Fig. 1I, item 50). The advantage of depositing a metallic seed layer on the substrate prior to forming the layer of first photoresist material is to properly electroform the nozzle plate. Therefore, it would have been obvious to deposit a metallic seed layer on the substrate prior to forming the layer of first photoresist material to properly electroform the nozzle plate.

**Claim 22** is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Gardner* (US Patent 4,246,076) in view of *Nakazawa et al* (JP Patent Publication H06-206314) and *Amrich et al* (US Patent 7,018,418).

- a. Regarding claim 22, in addition to the limitations in claim 11, *Gardner* may not expressly disclose forming the nozzles by ablating through the bodies.
- i. However, *Nakazawa et al* teaches forming a nozzle extending through a body (Figs. 1 and 7-10). The advantage of forming a nozzle extending through a body is to produce a nozzle with less vibration during operation. Therefore, it would have been obvious to form a nozzle extending through a body to produce a nozzle with less vibration during operation.
- ii. In addition, *Amrich et al* teaches in his reference forming a resist pattern by ablating through the resist body (12:4-10). The advantage of forming a resist pattern by ablating through the resist body is to make a highly detailed resist pattern. Therefore, it would have been obvious to form nozzles made of resist by ablating through the resist body to make a highly detailed resist pattern.

**Claim 23** is rejected under 35 U.S.C. § 103(a) as being unpatentable over *Gardner* (US Patent 4,246,076) in view of *Nakazawa et al* (JP Patent Publication H06-206314) and further in view of *Amrich et al* (US Patent 7,018,418).

- a. Regarding claim 23, in addition to the limitations in claim 18, *Gardner* as modified may not expressly disclose forming the nozzles by ablating through the bodies.
  - i. However, *Amrich et al* teaches in his reference forming a resist pattern by ablating through the resist (12:4-10). The advantage of forming a resist pattern by ablating through the resist is to make a highly detailed resist pattern. Therefore, it would have been obvious to form nozzles made of resist by ablating through the resist to make a highly detailed resist pattern.

#### **Response to Arguments**

Applicant did not provide arguments along with the RCE and claims submitted on 5/3/10.

#### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David P. Angwin, whose telephone number is (571) 270-3735. The examiner can normally be reached on 7:30 AM - 5 PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derris Banks, can be reached on 571-272-4419. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Angwin/  
Examiner, Art Unit 3729

DPA